Shell Answer Book #13

THE EMERGENCY REPAIR BOOK

Simple things almost anyone can do to deal with car trouble on the road

By Dick Hall, Supervisor, Shell Automotive Service Training

Come to Shell for answers

Keep this book in your glove compartment. Next time you have car trouble, you may be able to fix it yourself, or at least patch it up enough so you can drive for help.

I've been working in and around service stations for almost forty years. And in that time I've seen lots of people stranded on the road because of some little problem they might have easily fixed themselves.

This book won't turn you into a mechanic, but it will show you a few simple ways to deal with some of the more common car problems yourself.

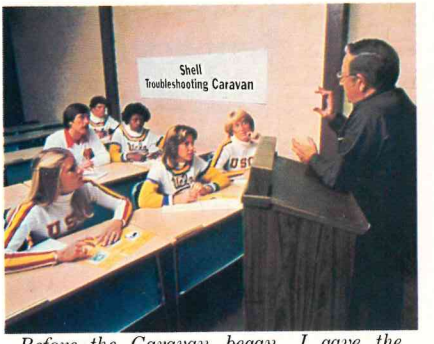
Q. Me make car repairs? I'm all thumbs.

A. Some car repairs are often no more difficult than wrapping a gift or reading a thermometer. You just have to know where to look, what to look for, and most important, what to do when you find it.

To illustrate my point, I asked six college cheerleaders — three from U.S.C. and three more from U.C.L.A. — to help me in a trouble-shooting demonstration. All of them could drive, but none of them had any prior mechanical training.

At Shell's Service Training Center in Anaheim, California, I gave them a two-hour "quickie" course in how a car works. I also gave them the Shell Troubleshooting Guide. (I'll tell you how you can get a copy later in this book.)

Then, for the next two days, I put the students to the test in a Shell Troubleshooting Caravan. We drove from Anaheim to San Diego and back with test cars rigged to malfunction along the way.



Before the Caravan began, I gave the students a brief lesson in the workings of a car. Some of what I told them, you'll learn in this book.

About the author

Dick Hall has been with Shell since 1940. He's owned and managed service stations and has spent years as a business consultant to other Shell dealers as part of Shell's Dealer Training Program. Now, holding five certifications with the National Institute of Automotive Service Excellence, Dick is the Supervisor of Automotive Service Training, helping station managers and their employees at Shell Training Centers across the nation.

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You don't have to be a mechanic to make minor car repairs. To illustrate, we asked cheerleaders from the University of Southern California and U.C.L.A. to participate in a Troubleshooting Caravan. Along the way, various things were sabotaged. The students figured out what the problems were and how to fix them. Here's how we looked when it was over.

In every case, the students figured out what the problem was and what to do about it. Once you've read this book, you should be able to handle some car problems better.

Q. Won't I need a lot of expensive tools?

A. No, you won't. You only need a few basic items for emergency repairs. The whole kit should cost less than $18, and if it saves you a towing charge even once, it could more than pay for itself.

Emergency items every car should have: jumper cables, flashlight, siphon pump, distress flag, flares, duct tape, wire, paper clip, tire inflator, plastic water bag, screwdrivers, adjustable pliers.

It's also a small price to pay if it keeps you from being stranded on a dark and lonely road because of some little problem you could have fixed yourself with the right tools.

Q. Car trouble is a pain. Can't I do something to avoid it?

A. Definitely. That's the whole idea of preventive maintenance: *Keeping* things in good shape.

Keep an eye on your car's vital fluids: gasoline, oil, coolant/antifreeze, battery, power steering, brake, and transmission fluid.

Lots of people use self-serve gas stations today. That can save money at the pump. But if you're *not* prone to check your own oil, tire pressure,

Make it a habit to look at your tires each time you get in your car. When the University of Southern California team came back from lunch, they found a flat.

*If it's inconvenient to change a tire on the spot, you can sometimes inflate it to a safe level with a can of tire sealant and inflator. (**Caution:** this is just a temporary repair. Drive to the nearest service station and have the tire repaired or replaced.)*

and water level in the radiator and battery, you just might be penny-wise and dollar-dumb. It doesn't do much good to save a few cents at the gas pump if neglect is going to lead to costly problems later.

Q. I turn the key and nothing happens. What then?

A. Use your headlights to help you find what's wrong. If they turn on and don't go dim when you try to start again, the trouble may be with the "neutral" switch in your automatic transmission. Sometimes jiggling the lever in Park or Neutral (while turning the key) will help.

If your lights go dim when you try to start, you may have a loose battery connection or corroded battery terminals. For either, loosen the bolts, carefully pry the clamps apart and lift the cables off (grounded side first). Clean the contacting surfaces until bright. Use a knife or emery cloth. Then fasten the cables back securely (grounded cable last). Attach them so firmly to the terminals that you can't turn them.

After doing the above, if your lights still go dim, you probably have a low battery. If they never lit at all,

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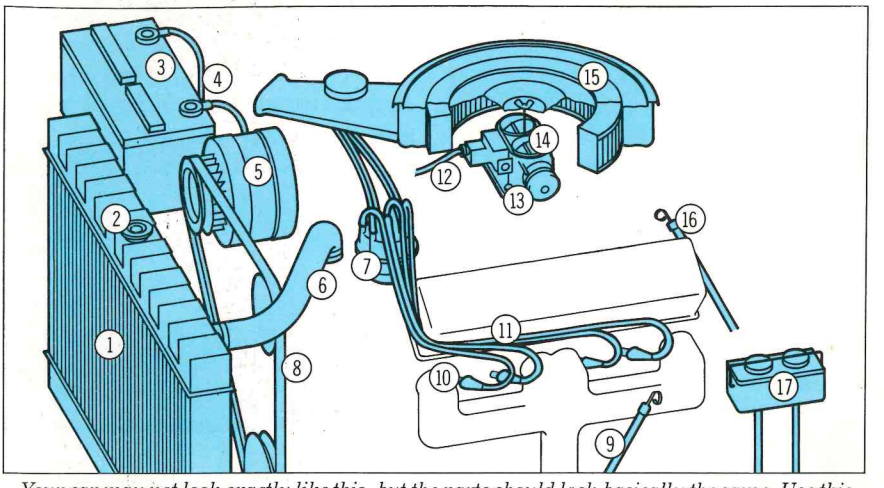


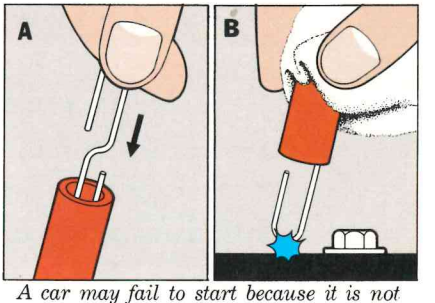
*Your car may not look exactly like this, but the parts should look basically the same. Use this diagram to help you identify: **1.** Radiator **2.** Radiator cap **3.** Battery **4.** Battery cables **5.** Alternator **6.** Upper radiator hose **7.** Distributor **8.** Fan belt **9.** Oil dipstick **10.** Spark plug **11.** Spark plug wires **12.** Gas line **13.** Carburetor **14.** Choke valves **15.** Air cleaner **16.** Transmission dipstick **17.** Brake fluid reservoir.*

your battery is probably dead or disconnected. You'll need a jump-start so you can drive to a service station or garage. (Use caution when working around a battery. For more details, see Shell's Answer Book #12, *The Unexpected Dangers Book.)*

Q. My engine turns over just fine. Why won't it start?

A. It's probably trouble with one of three key ingredients — air, spark or gasoline. A strong gasoline smell means it's probably flooded. Raise the hood, if gas is on the engine, get help. If not, try cranking ten seconds with the gas pedal *on the floor.* Don't pump. If it doesn't start, tap the carburetor lightly near the gas line. Then repeat entire procedure.

To see if you're getting a spark, remove one spark plug wire. Simply hold it by the "boot," twist, and pull. Pull open a paper clip (see illustration) and push it so that it fits firmly into the end of the wire connector. Holding the back end of the boot with a rag, position the paper clip about ⅛ of an inch from any nut or bolt on the engine. As someone else cranks the engine, you watch for a spark. And if you don't see one, it's probably time to call for help.



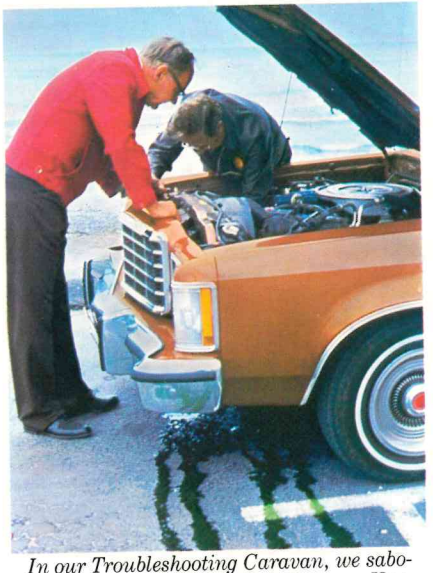
*A car may fail to start because it is not getting a spark. You can check for a spark by inserting a paper clip in the spark plug wire connector (**figure A**), then hold it close to metal to see if there's a spark (**figure B**). See text for detailed instructions.*

Maybe the engine isn't getting enough gasoline. If you're sure there's gas in the tank, remove the top of the air cleaner and see if the choke valve is stuck open. Push it shut and try to start the car. If that's not it, open the choke and look deep inside while someone pumps the gas pedal. If you can't see gas squirting, the problem could be more complicated. Better get help.

Q. My temperature warning light is seeing red. What's wrong?

A. Your engine is probably overheating. Pull off the road, turn on your flashers, and turn off the key.

1. Look for a water leak — usually in the radiator or the radiator and heater hoses. If you find a small leak in a hose, wait for the engine to cool, then tape it up, if you can. Loosen the radiator cap one notch to relieve pressure, and drive slowly to the nearest service station.



In our Troubleshooting Caravan, we sabotaged the students' cars along the way. Here, while they're away from the car, we slit the radiator hose to cause a leak.

Before you tape up a leak as shown here, let the engine cool. Then clean all the dust, dirt, grease, and water from the hose. Otherwise, the tape won't hold. And you'll still have a leak.

2. When the radiator is cool enough to touch, check the level of coolant. If it's low and you have water handy, fill 'er up.

3. Check the fan belt. If it's broken, but the radiator is full and the cap is back on tight, you can drive slowly until your warning light comes on again. Then stop and let the engine cool. This way you can probably limp far enough to get help.

Q. Sometimes when I'm stuck in heavy traffic, my engine gets hot. What can I do?

A. Try this: Turn off your air-conditioner and turn on your heater. (It may be uncomfortable, but it'll take some of the built-up heat off the engine.) Then put the transmission in Neutral and rev up the engine a bit. The temperature should go down. But if your warning system still reads "hot," pull off the road and stop. Don't risk engine damage.

. Oh no! My brake light just came on. What do I do?

. Don't panic. Since 1968, all cars)ld in America have two separate ydraulic systems which control the 'ont and rear brakes. If you have a rake light, and it comes on, it means 1at one of those systems has failed. ;ut you should have enough braking ower in your second system to stop 1e car.

Test your brakes. If they still vork, head slowly for a mechanic, voiding the need for sudden stops.

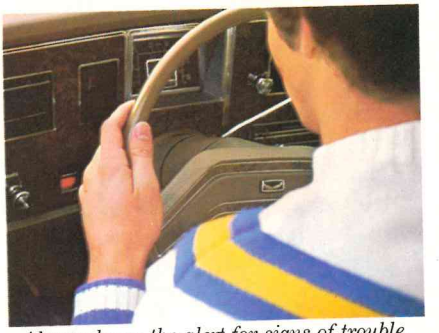
On the remote chance that your)rakes go completely out, shift into a ower gear to slow down, pull to the ;ide of the road and gradually apply he emergency brake. *Don't drive urther. Have the car towed to a 1arage so it can be checked out.*

Sometimes brake problems can be caused by too little brake fluid. Here two of the U.C.L.A. team members look on as another adds brake fluid to their car.

Q. My oil light is glowing. Should I keep going?

A. Only if you want to risk buying a new engine. If the warning light is working right, you've lost oil pressure and maybe oil, too. Pull safely off the road, stop the engine and turn on your flashers.

Check the oil dipstick first. If no level shows, don't drive until you've added some oil.



Always be on the alert for signs of trouble. When a warning light comes on, take heed. Failure to act promptly could cause you big trouble a little farther down the road.

If your oil level shows but the light stays on when the engine is running, don't drive any further.

If the warning light just flickers when you're stopped in traffic, your engine may be idling too slow. Or your oil could be getting thin or low. Motor oil is the lifeblood of your car. Check it often. And don't go any-

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where when you know you don't have enough. *Keep* a quart in the trunk.

Q. Do I have to stop if the alternator light comes on?

A. No. This light means that the alternator is no longer recharging the battery, but you can still drive for a while on the battery's stored energy. If you have to go very far to reach a service station or garage, turn off electrical devices that can sap the battery's energy.

Q. How can I learn more?

A. Write me, and ask for the free Shell Troubleshooting Guide. In easy-to-read chart form, this guide

lists many common car problems and their possible causes.

And if you have any questions about the emergency repairs in this book, you can write: Dick Hall, Shell Oil Company, P.O. Box 61609, Houston, Texas 77208.

Shell Answer Book 8
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THE CAR CRIME PREVENTION BOOK
How to fight back before you get ripped off
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